

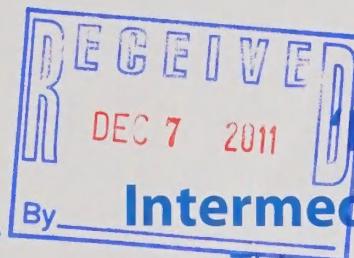
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United States Department of Agriculture
Natural Resources Conservation Service
Plant Materials Program



Manifest[®] Intermediate Wheatgrass

Thinopyrum intermedium

A Conservation Plant Release by USDA NRCS Bismarck Plant Materials Center, Bismarck, North Dakota
and USDA ARS Northern Great Plains Research Laboratory, Mandan, North Dakota



Manifest intermediate wheatgrass seed production field

'Manifest' intermediate wheatgrass (*Thinopyrum intermedium* (Host) Barkw. & D.R. Dewey subsp. *intermedium*) was released as a cultivar in 2007. This was a cooperative release with the United States Department of Agriculture, Agricultural Research Service; the United States Department of Agriculture, Natural Resources Conservation Service; and the North Dakota Agricultural Experiment Station, North Dakota State University.

Description

Intermediate wheatgrass is a cool-season perennial sod forming grass introduced from Russia in the mid 1900s. It grows to a height of 23-47 inches (6-12 dm). It begins growth in mid April. Flowering starts in late June and continues throughout September.

Source

Manifest was designated as Mandan I1871 in performance testing. It was assigned a PI number of 658585. Manifest is a 12-clone synthetic cultivar selected at the USDA ARS Northern Great Plains Research Laboratory, Mandan, ND, from 10 accessions collected by the late Douglas R. Dewey (USDA ARS, Logan, UT) near Stavropol and Svetlograd, in the Caucasian region of Russia. Parent clones of Manifest were selected based on performance of their respective polycross progenies in replicated tests. Manifest was selected for its forage yield, seed yield, spring vigor and resistance to leaf spot disease.

Conservation Uses

Manifest has exhibited consistent high forage yield over a wide geographic area and improved persistence under grazing, compared with current cultivars. Disease

problems have not been observed in regional tests, where overall levels of infection at individual sites were light to moderate. In vitro dry matter digestibility and crude protein levels of Manifest have averaged slightly less than several other current intermediate wheatgrass cultivars, but nutritive quality was adequate for all classes of beef cattle. Manifest is recommended in grass and grass-legume mixtures for hay and grazing. When compared to Reliant, Manska and Oahe, Manifest exhibited higher shoot replacement ratios. This should allow Manifest to withstand grazing and provide increased stand longevity compared to Reliant, Manska and Oahe. Manifest provides upright tall nesting cover and escape cover for many ground nesting birds and small and large mammals. Manifest also has potential as a perennial crop for cellulosic biomass in northern areas adapted to cool-season grass production.

Grazing and Haying Management

Intermediate wheatgrass is palatable to all classes of livestock and wildlife. It provides excellent spring, early summer, and fall pasture. It makes good quality hay when harvested at the proper time (boot stage). In a mixture with alfalfa, productivity is enhanced and its stiff stems tend to keep the alfalfa from lodging. Eight inches of new growth should be attained in the spring before grazing is allowed on established stands. Six inches of regrowth before killing frost should be maintained following grazing or haying.

Area of Adaptation and Use

Manifest was developed for use in the Northern Great Plains. It is projected to perform well in the Central Great Plains, Upper Midwest and parts of the Intermountain West where annual precipitation averages more than 14 inches (350 mm). Intermediate wheatgrass becomes dormant during hot dry conditions and is utilized best in spring, early summer and fall. Manifest appears to be adapted to a wide range of coarse to fine textured soils. It is similar to other intermediate wheatgrass varieties listed as moderately tolerant to saline soils.

Establishment and Management for Conservation Plantings

Manifest is easily established when seeded into a well packed weed-free seedbed. The optimum seeding depth should place the seed not more than 1 inch from the soil



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surface. Establishment can be improved by using moisture conserving seedbed preparation practices and seeding methods to maximize the available soil moisture on the site. If weed competition becomes a problem, herbicides can be applied. The seeding rate of Manifest is similar to other intermediate wheatgrass varieties. A seeding rate of 8.5 pounds PLS/acre (17 seeds/ft²) is recommended in western North Dakota. The recommended seeding rate is generally higher in eastern North Dakota where a seeding rate of 10 pounds PLS/acre (20 seeds/ft²) is recommended. Contact NRCS field offices for recommended seeding rates in other states.

Ecological Considerations

Intermediate wheatgrass is not known to spread aggressively. Insect problems are rare although grasshoppers and other insects will consume intermediate wheatgrass herbage. Leaf spot is a common disease of intermediate wheatgrass. Manifest was selected based on its resistance to leaf spot disease caused primarily by *Cochliobolus sativus* (Ito & Kurabayashi) Drechs. Ex Dastur.

Seed and Plant Production

Intermediate wheatgrass is a relatively easy species to grow for seed production. Seedling vigor is good and stands establish quickly. The seed does not shatter as readily as most grass species. Seed production is greatly improved with proper soil fertility. Applying nutrients according to soil tests will greatly improve seed and forage yields. Seed yields are similar to other intermediate wheatgrass varieties and will average around 350 pounds/acre on dryland. Fields are generally swathed and combined or direct combined.

Availability

For conservation use: Seed availability is limited at this time. Commercial seed growers are currently being recruited.

For seed or plant increase: Breeder seed of Manifest will be maintained by USDA ARS, Northern Great Plains Research Laboratory, Mandan, ND 58554. One generation each of Foundation and Certified seed beyond Breeder seed is authorized. Foundation seed will be available from the USDA NRCS Bismarck Plant Materials Center, 3308 University Drive, Bismarck, ND 58504.

For more information, contact either:

USDA NRCS Plant Materials Center

3308 University Drive

Bismarck, North Dakota

ph (701) 250-4330

fax (701) 250-4334;

or

USDA ARS

Northern Great Plains Research Laboratory

Mandan, North Dakota

ph (701) 663-6445

Citation

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For additional information about this and other plants, please contact your local USDA Service Center, NRCS field office, or Conservation District

<<http://www.nrcs.usda.gov/>>, and

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<<http://www.plant-materials.nrcs.usda.gov>>